Nanostructure Synthesis using Reactive Block Copolymers

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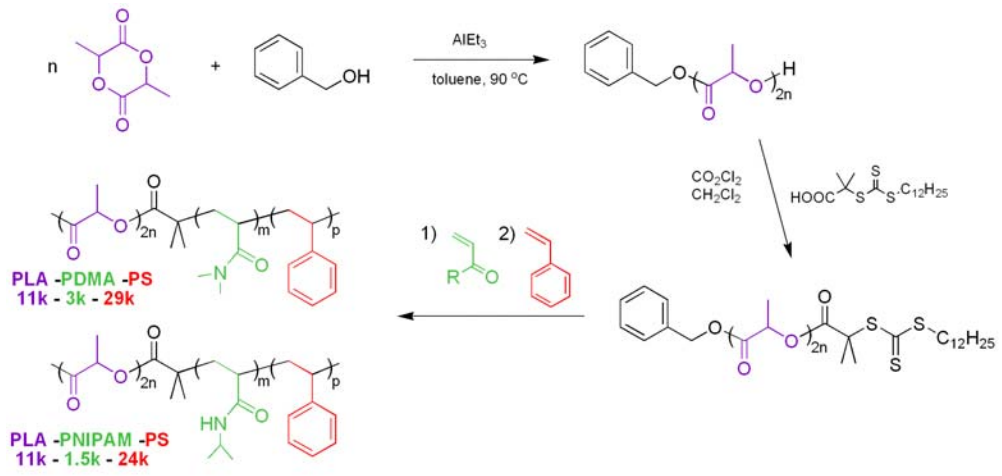
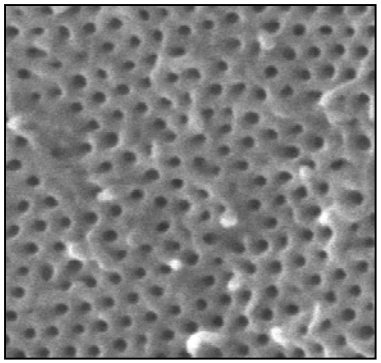
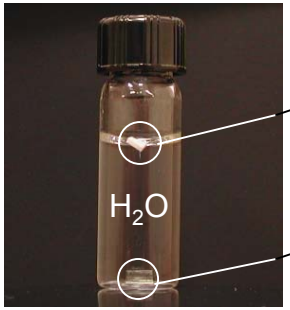




Nanoporous material is obtained by degrading a sacrificial component (polylactide, PLA) from an ordered ABC triblock copolymer precursor. (SEM image of degraded PS-PDMA-PLA triblock, pore diameter ≈ 20 nm)

We have prepared ABC triblock copolymers containing polylactide (PLA) by a combination of ring-opening and controlled free-radical polymerizations. Degradation of the PLA component in the self-assembled nanocomposites gave nanoporous PS monoliths with hydrophilic channels due the presence of the polyacrylamide block on the surface of the pores. This ABC methodology allows for controlled tuning of the pore functionality in nanoporous organic materials.



Nanoporous monolith from PS-PLA diblock with *hydrophobic* pores

Nanoporous monolith from PS-PMDA- PLA triblock with *hydrophilic* pores